The California Health Interview Survey 2001: Translation of a Major Survey for California's Multiethnic Population

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SYNOPSIS

The cultural and linguistic diversity of the U.S. population presents challenges to the design and implementation of population-based surveys that serve to inform public policies. Information derived from such surveys may be less than representative if groups with limited or no English language skills are not included. The California Health Interview Survey (CHIS), first administered in 2001, is a population-based health survey of more than 55,000 California households. This article describes the process that the designers of CHIS 2001 underwent in culturally adapting the survey and translating it into an unprecedented number of languages: Spanish, Chinese, Vietnamese, Korean, and Khmer. The multiethnic and multilingual CHIS 2001 illustrates the importance of cultural and linguistic adaptation in raising the quality of population-based surveys, especially when the populations they intend to represent are as diverse as California's.

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Health policies that address the needs of a diverse and multicultural population are critically important to California and are of growing importance to many other states and the nation as a whole. According to Census 2000 figures, no single ethnic or racial group constituted a majority in California: nearly one in three Californians was identified as Latino (32%) in the 2000 Census, and for the first time, non-Latino whites comprised less than the majority (47%). More than 25% of Californians were immigrants, compared with 11% nationally. A considerable percentage of Californians (39.5%) spoke a language other than English at home. I

This cultural and linguistic diversity presents challenges to the design and implementation of population-based surveys that serve to inform public policies. In particular, information derived from such surveys may be less than representative if groups with limited or no English language skills are not included.^{2,3} In practice, implementation of translated Spanish survey instruments in general population surveys began only in the past decade. The National Cancer Institute sponsored a Spanish translation guide to the National Health Interview Survey (NHIS) that included the core questionnaires and the Cancer Risk Factor supplements for 1987 and 1992. After the NHIS was redesigned in 1997, a Spanishlanguage version was introduced in the third quarter of 1998. Bilingual interviewers do ad hoc translations in several other languages, but Spanish is the only language for which there is a formal, written version (Personal communication, Deborah Rose, PhD, National Center for Health Statistics, December 2003). The Centers for Disease Control and Prevention's state-administered Behavioral Risk Factor Surveillance System has used Spanish-language questionnaires only since 1997.4 The Census Bureau's Current Population Survey, the leading source of national health insurance statistics, is conducted in English but may be translated into other languages by bilingual interviewers, family members, or neighbors.5 Not until 2001 was there an effort to make a major population-based survey capture broad linguistic diversity in its sample using multiple translated survey instruments. This article describes the process that the designers of the California Health Interview Survey (CHIS) underwent in translating the English version of the survey into Spanish, Chinese, Vietnamese, Korean, and Khmer.

THE CHIS

The CHIS is a population-based telephone survey of California's population designed to be conducted every two years. First administered in 2001, it is one of the largest health surveys in the nation. The 2001 CHIS collected information on key health indicators for all age groups, including information on health status, health conditions, health related behaviors, health insurance coverage, access to health care services, and other health and development issues. The CHIS is conducted by the UCLA Center for Health Policy Research in collaboration with the California Department of Health Services and the Public Health Institute. The survey is funded by both public and private organizations and is overseen by six advisory committees involving more than 150 representatives from scores of research, government, and advocacy organizations.⁶

The CHIS sample is designed to provide health-related

estimates for California's overall population, the state's largest racial/ethnic groups, several smaller ethnic groups, and the populations of California counties. In 2001, the CHIS's random-digit-dial telephone survey used a multi-stage sampling design, selecting households drawn from every county in California and yielding a sample that was representative of the state's non-institutionalized population living in households. The respondents included one randomly sampled adult aged ≥ 18 years from each household (n=55,428); in households with adolescents, one adolescent aged 12–17 years (n=5,801); and in households with one or more younger children, the adult who was reported to be most knowledgeable about one sampled child younger than age 12 (n=12,592).

ADAPTING THE CHIS

Investing in a process of cultural and linguistic adaptation ensured that CHIS 2001 reached California residents who have historically been underrepresented in population-based surveys. These groups are left out because of English-only administration and cultural biases that may favor participation of more acculturated mainstream groups. Realistically, CHIS 2001 could not address the needs of *all* groups. Budget and operational constraints limited translation into, at most, five languages within a six-month window. Thus, the UCLA study team faced the challenge of deciding which underrepresented subpopulations to target.

Criteria for language selection

The members of the CHIS 2001 Multi-Cultural Issues Technical Advisory Committee (MCTAC) guided the UCLA study team in developing the criteria for selecting the languages for translation. The MCTAC, one of the six advisory committees overseeing the CHIS, consisted of more than 20 researchers and practitioners with longstanding commitments to reducing racial and ethnic disparities in health.

Under the guidance of the MCTAC, the UCLA study team applied these selection criteria to data from the 1990 Census Public Use Microdata Sample (PUMS 5% file); 1990 data were used because Census 2000 files were not yet available. First, we set a minimum criterion that at least 100 individuals from a given language-related ethnic group would be represented in the CHIS 2001 sample (fewer than 100 would have reduced the analytic utility of these cases). To yield an anticipated 100 completed interviews in a 55,000 household sample, the minimum threshold needed to be set at 50,000 or more individuals speaking a given language. Second, the CHIS 2001 advisers expressed the importance of representing limited-English-proficient individuals usually left out of English-only population-based surveys. Thus, we identified languages that were spoken by groups that were "linguistically isolated," i.e., groups with a large percentage of households in which no member older than age 14 can speak English well or very well. This measure is especially important in California, where the 1990 rate of linguistically isolated households was 10%, compared with a national rate of 3%.9 The higher a group's rate of linguistic isolation, the less likely that the group will be represented in surveys that use English only. We therefore used a high threshold floor for the linguistic isolation rate (>40% of households) to target linguistic minority communities normally left out of population-based surveys.

These two steps resulted in the initial selection of four languages: Spanish, Chinese, Korean, and Vietnamese. Members of the UCLA study team, the cultural reviewers, the translators, and the referees arrived at a decision to use a single written Chinese version of the survey to conduct interviews in Mandarin, Cantonese, and a few other Chinese dialects, with interviewers substituting wording as necessary.

Khmer (Cambodian) was included in the initial selection because the CHIS 2001 sampling strategy included an oversample of Cambodians. The CHIS 2001 sampling plan allocated separate sampling strata for cities with local health departments (Berkeley in Alameda County and Pasadena and Long Beach in Los Angeles County). The Long Beach sampling stratum included a larger sample of Cambodians (approximately 10% of the city's population) than would have been expected with a simple random sample of Los Angeles County's population. Thus, Khmer was added to the list of languages. This decision was reinforced by a very high 1990 linguistic isolation rate (56.2%) among Khmerspeaking households in California.

Choice of target groups for cultural adaptation

For the cultural adaptation of the survey, the study team focused on four of the largest minority groups in California—African Americans, American Indians and Alaska Natives (AI/ANs), Latinos, and Asian Americans. People of Mexican birth or ancestry make up the majority of California's Latino population,⁹ so we specified a Mexican cultural review of the questionnaire. We also focused on Asian American subgroups that spoke the languages chosen for translation. Thus, for the cultural/linguistic adaptation process, we targeted two groups in which most members are proficient in English (African Americans and AI/ANs) and five groups in which many members have limited English proficiency (people of Mexican, Chinese, Vietnamese, Korean, or Cambodian birth or ancestry).

Cultural adaptation process

UCLA contracted with a private agency to implement the cultural adaptation and translation processes. The contract agency, an education research firm that had vast expertise in evaluating and designing cross-cultural instruments, provided guidance in developing the cultural review process.

Because of the six-month time frame, a cultural adaptation process was implemented that was largely expert-based. The "expert" bias was mitigated by involving several experts per target ethnic group so that no individual dominated the review. The process also included focus groups with selected English-speaking target groups.

The contract agency recruited a statewide panel of experts to conduct the cultural review. The agency selected 12 bilingual/bicultural reviewers with survey expertise focused on the targeted ethnic groups. The reviewers' ethnic/linguistic backgrounds reflected our target groups: African Americans, American Indians, Cambodian Americans, Chinese Americans (both Cantonese and Mandarin speakers), Korean Americans, Mexican Americans, and Vietnamese Americans.

The cultural reviewers were asked to independently rate

each question from each of three CHIS instruments (Adult, Adolescent, and Child) using a four-point Likert-type rating: 1 = problematic item, 2 = weak item, 3 = adequate item, or 4 = exemplary item. ¹¹ The reviewers were instructed to provide comments on how they arrived at each decision and suggestions on how to improve the wording of the questions, particularly those that were rated as "weak" or "problematic." In addition to this feedback, the reviewers recommended adding an introductory script before sensitive questions, such as explaining the importance of collecting information on citizenship and cancer.

After the reviews were completed, a two-day meeting was held at which the local Los Angeles area reviewers and UCLA staff discussed the instrument item by item. The contractor took minutes and prepared a report that summarized and consolidated the recommended changes.

Focus groups. To test the culturally reviewed instruments with English-speaking minority group members, we conducted separate focus groups with African American adults, African American adolescents, AI/AN adults, and AI/AN adolescents. An African American community-based organization in South Central Los Angeles and an AI/AN communitybased organization in the Sacramento area organized the recruitment of low-income African American and American Indian adult and adolescent participants for the focus groups. Each group consisted of four to five participants. The participants found most items to be understandable and not culturally offensive. Members of both adolescent focus groups stressed the importance of conveying that the survey participant was chosen randomly, and not purposively. The groups made some specific suggestions that were adopted, including a suggestion from the AI/AN adult focus group that the Pap test should be described as a test for cervical cancer, not as an STD test.

Translation process

Models of cultural equivalency have been introduced to give translators a theoretical foundation for cross-cultural translation decisions. 12,13 Increasingly, researchers studying multiethnic populations are adopting a strategy of "decentering" the translation process by directly developing instruments in-language.14-17 However, the CHIS, designed to produce a biennial population-based, public-use dataset with information on more than 55,000 households, has different goals and constraints. The aim for the translation of CHIS 2001 was to achieve content equivalence, as defined by Hilton and Skrutkowski: "Each item's content is relevant in each culture." These authors note that, when content equivalence is the goal, "some constructs cannot be insinuated into instruments for other cultures. For example, items referring to government programs need to reflect the social structure and healthcare delivery system of the nation where the instrument is employed."11 Because CHIS 2001 was a health planning and policy tool to improve Californians' access to and appropriate utilization of the state's health care system, the translation approach relied preponderantly on loyalty, or "centeredness," to the English version. Within our time frame, we could not guarantee achieving conceptual equivalence, whereby instruments are assured of measuring identical theoretical constructs. 18 This would have required extensive cognitive testing and experimental assessments that were not within the scope of CHIS 2001.

Choice of translation method. We considered two translation methods, both widely used in national and international studies: forward/backward translation (FBT) and translation by committee (TBC). FBT techniques involve one person translating a document (document A) into another language and another person translating the resulting document (document B) back to the original language (document C). To the extent that document A and C are equivalent, then document B is assumed to be a good translation.¹⁹ The major weakness of FBT approaches is that translators have an incentive to choose "word-for word" translations instead of striving for concept equivalence.20 Moreover, if both the forward and backward translators share common misconceptions about the target language and its semantic shadings, they could easily make similar mistakes in translating and back-translating. The accuracy of the translation may be influenced in other ways by the competence of the forward and backward translators. For example, the forward translator may be excellent, but if the backward translator is poor, the end result may suggest erroneously that the translation is a poor one.14 Nevertheless, the FBT process has been considered the preferred method of achieving instruments that are culturally equivalent.²⁰

We originally leaned toward standard FBT, but explored other options that would better fit our short time frame. TBC was a possible alternative. Although more recent studies have augmented FBT with committee discussions and thus have had a "TBC" component,21,22 what distinguished TBC from FBT in its earlier taxonomy was the former's use of multiple forward translations. This distinction is most relevant for our discussion; we therefore refer to TBC as "multiple forward translations" (MFT). In the MFT method, translators create two or more forward translations, which are then reconciled by another independent translator. As for FBT, for MFT to be done properly, all those involved must be bilingual and bicultural, must be familiar with the instrument and its target populations, and must possess the same qualifications as translators.²³ MFT also shares with FBT the risk that all translators and editors may have a similar cultural background bias, leading to similar inconsistencies. 11,20 MFT is potentially quicker than FBT because the two forward translations can be done concurrently. MFT has been used in several national and international health studies. 24-28 In addition, two studies that compared FBT with MFT found that the two approaches yielded equivalent results.^{29,30} With its time-saving feature, the MFT method presented a viable alternative for meeting CHIS 2001 objectives.

CHIS 2001 adopted the MFT method for all translations with changes in the methodology that addressed the known drawbacks of the MFT process. Central to these modifications was the use of an outside referee to judge the quality of each of the forward translations. We refer to this modified approach as refereed multiple forward translations (RMFT). Through a competitive bid process, the UCLA study team selected three independent firms (two based in southern California and one in northern California) to conduct the RMFT process. All three agencies employed a pool of professionally credentialed translators. The firm that acted as

the "referee" agency was also closely associated with community-based health centers that serve low-income Asian Americans and Latinos. This association lent additional expertise in medical language, health insurance terms, and colloquial expressions specific to lower-income segments of the CHIS 2001 target populations.

The Spanish translation was the first one undertaken. For the Spanish translation, the two different translation agencies translated the questionnaires from English into Spanish, and then the referee agency evaluated the two forward translations based on oral and written instructions on evaluating the quality of the translations. Each item was ranked on a three-point scale: (1) Discrepancies are minor and can be ignored; (2) discrepancies are minor but require minor changes on the items (these items were sent back to the translating agency to reword); and (3) discrepancies are major and must be resolved. These latter items were sent to the translating agencies as priority items for follow-up conference call discussion. Conference calls involved all translators, including the referee translator, the heads of the translating agencies, and the relevant CHIS 2001 UCLA study team members. The problematic items were discussed during a conference call lasting three to four hours, ultimately yielding a version acceptable to all.

Through RMFT, we could quickly detect problems in the translation; for example, the first Spanish-language translations submitted by the two agencies were identical, raising suspicion of extensive use of auto-translation software. When both agencies hired new translators and resubmitted, the distinctive similarity disappeared. Had we used the FBT method, the exclusive use of auto-translation programs (available widely for Spanish and to some extent for Chinese) may have taken longer to detect, if they were detected at all.

Following the successful reconciliation, the CHIS 2001 Spanish-language questionnaire benefited from an additional review by the data collection firm's bilingual interviewers, who examined the translated questions based on their survey expertise and phone interview perspective. They recommended further changes to make the translation more conversational and personal in tone. For example, for the question, "What is your age now, please?" the Spanish interviewers simplified "¿Por favor, cuantos años tiene usted?" to "¿Cuál es su edad, por favor?" In total, the Spanish translation process took 13 weeks: two weeks for the first forward translations that were judged unacceptable, two weeks for the second round of the forward translations, three weeks for the review and reconciliation, two weeks for editing, two weeks for the data collection firm's review, and two additional weeks for the final editing.

The unanticipated delays in the Spanish language translation motivated our decision to streamline the translation process for the Asian languages. For each of the Asian languages, two agencies translated only the Adolescent Insurance module (the shortest component of the CHIS 2001 survey), and then, based on input from the referee agency, we chose the firm with the superior product to translate the remaining survey components. The referee translator then prepared a written evaluation of each item for discussion, and then a conference call was convened among the single forward translator, the referee, and the lead author. This refereed single forward translation method (RSFT) reduced

the time for the review of the forward translation. In addition, the reviews were generally shorter over time due to efficiency gains in the management of the process. The RSFT process to translate CHIS 2001 into the Asian languages consumed slightly over eight weeks per language: one week for the two forward translations of the Adolescent Insurance module and the review and selection of the translation firm with the better product, one week for the completion of the single forward translation, one week for the review and reconciliation, two weeks for editing, one week for the data collection firm's review, and two additional weeks for the final editing. The Khmer translation was delayed the most because of scheduling difficulties and hardware limitations experienced by our Khmer reviewers and editors. Overall, producing the Spanish and Asian language versions took seven months—one month over our six-month window.

Interviewer debriefings. Debriefings with the data collection firm's interviewers yielded valuable information on how well CHIS 2001 translations were faring in the field. The rapid time frame for fielding the translated surveys soon after the launch of the English interviews constrained us from pretesting the translated versions of the survey—an important component of validating translations. Thus, in the absence of pretests, these briefings served as invaluable checks for any systematic bias existing in the translations. (For CHIS 2003, the UCLA study team intensively monitored the initial interviews in Spanish, Cantonese, Mandarin, Vietnamese, and Korean.)

We conducted debriefings with the Spanish-, Cantonese-, Mandarin-, Vietnamese-, and Korean-speaking interviewers. (The Khmer version of CHIS 2001 was not yet in the field during the debriefings.) A number of recurring themes emerged from the interviewer debriefings. A common theme stressed by the interviewers was the need to be more conversational, although a formal tone or use of honorific language is appropriate in certain situations. For example, the Spanish-language interviewers found the transition from the formal-toned adult survey to the informal-toned adolescent survey awkward. One male interviewer felt uncomfortable addressing an older adolescent girl informally, using the

informal $t\acute{u}$ rather than usted, which highlighted issues of respect that existed in the Spanish translation and not in the original English version. The Vietnamese-language interviewers voiced similar concerns. Other issues revolved around utilization of health services. For example, some Korean-, Chinese-, and Vietnamese-speaking respondents reported that they went to a "Chinese medical doctor" who was an herbalist, acupuncturist, and traditional healer—choices that were separate categories in the set of possible responses. The question addressing whether a person had a "usual place to go to get health care" was also problematic. Several people mentioned family members who were doctors who made house calls—not one of the options.

For all groups, the question on permanent residency or having a "green card" required clarification but met with fewer refusals than expected (2.2% of non-citizen adults declined to answer). The addition of a preamble statement as recommended by the cultural reviewers (reminding respondents that their answers were confidential and would not be reported to any government agency) apparently reduced the question's intrusiveness. Similarly, questions on sexual orientation were uncomfortable for some, but not all, of the respondents and often the discomfort stemmed from an initial misunderstanding of the question, especially the term "bisexual."

CHIS 2001 SAMPLE

CHIS 2001 collected data on important health issues such as chronic disease prevalence, insurance coverage, and access to health care for a large and diverse sample of California residents (see Table 1). Part of the richness of the results lies in the diversity of languages that Californians speak. Important health information was collected in a language other than English from 8,946 Californians (Table 2). Nearly 11% of adults and more than 8% of adolescents were interviewed in a language other than English. More important, a considerable proportion (20.2%) of the "most knowledgeable adults" who provided information on children ages \leq 11 years completed the survey in a language other than English. Early findings from CHIS 2001 estimate that a consid-

	Table 1. Race/ethnicit	v reported by/1	or respondents to	California Health	Interview Survey, 2001
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Reported race/ethnicity	Adults ≥18 years	Adolescents 12–17 years	Children <12 years	
White	36,729	3,263	6,538	
Latino	9,458	1,515	3,928	
Asian American	3,956	376	935	
Black or African American	2,764	308	651	
American Indian and Alaska Native	781	115	168	
Native Hawaiian and other Pacific Islander	1,521	190	322	
Other single or multiple race/ethnicity	219	34	50	
Total	55,428	5,801	12,592	

NOTES: One adult aged \geq 18 years was interviewed per household. One adolescent aged 12–17 years per household was interviewed with parental permission. Information on children <12 years of age was collected from the adult who was reported to be most knowledgeable about the sampled child.

Table 2. Interview languages, California Health Interview Survey, 2001

	Adults ≥18 years		Adolescents 12–17 years		Children <12 years		Total	
Interview language	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All languages	55,427	100.0	5,801	100.0	12,592	100.0	73,820	100.0
English	49,508	89.3	5,312	91.6	10,054	79.8	64,874	87.9
Languages other than English	5,919	10.7	489	8.4	2,538	20.2	8,946	12.1
Spanish	5,073	9.2	448	7.7	2,331	18.5	7,852	10.6
Mandarin	229	0.4	10	0.2	42	0.3	281	0.4
Korean	225	0.4	8	0.1	59	0.5	292	0.4
Cantonese	213	0.4	3	0.1	53	0.4	269	0.4
Vietnamese	151	0.3	13	0.2	46	0.4	210	0.3
Khmer	28	0.1	7	0.1	7	0.1	42	0.1

erable proportion of parents whose children are eligible for Healthy Families (California's Children's Health Insurance Program) speak English not well or not at all.³¹ These results underscore the importance of administering a multi-language survey to ensure the representation of linguistic minorities in population-based surveys, particularly in a multicultural state such as California.

One important point held true for all translations: the interviews always took more time to administer in languages other than English (see Figure). This was possibly because of the need to explain certain questions related to the U.S. health care context repeatedly in other languages. Interview

length may have also been governed by whether the interview was administered using computer-assisted telephone interview (CATI) techniques or paper and pencil. Indeed, the average duration of the screening process that preceded the interviews was shortest for two of the languages administered with CATI (English and Spanish) (see Figure). The average screening time for Vietnamese, also administered in CATI, was comparable to those for Cantonese, Mandarin, and Korean.

Finally, the CHIS 2001 results reinforce the decision to use linguistic isolation as a criterion for language selection. Table 3 shows the percentage of interviews that were

Figure. Mean length of screening and interview by interview language, adult respondents, California Health Interview Survey, 2001

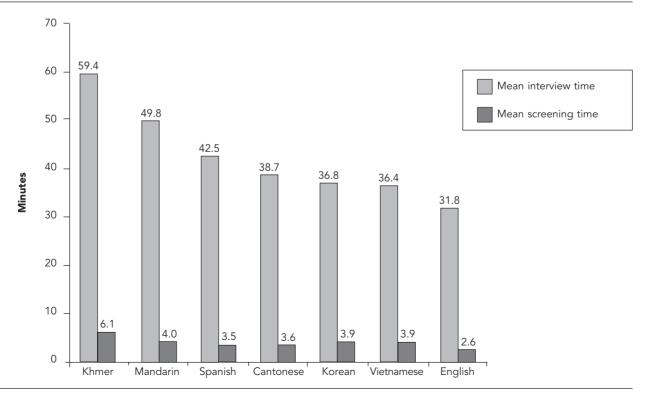


Table 3. Percent of interviews conducted in languages other than English, by target race/ethnicity groups, California Health Interview Survey, 2001

	Percent					
Target group	Adults ≥18 years	Adoles- cents 12–17 years	Children <12 years	Total		
Latino Chinese American Korean American Vietnamese American Cambodian American All target groups	50.5 34.8 48.4 48.5 38.0	27.9 14.3 16.3 33.3 41.2 8.4	57.5 34.3 52.2 52.8 42.9 20.2	50.1 33.5 46.6 48.1 39.2 12.1		

conducted in a language other than English. More than 33% of respondents from our target language groups—Latinos and people of Chinese, Korean, Vietnamese, or Cambodian ancestry—completed a translated version of the CHIS survey. Had the survey not been translated into these languages, a considerable proportion of members of these groups would have been excluded from participating in the survey.

LIMITATIONS OF THE PROCESS

While we aimed to be as comprehensive and objective as possible, we faced drawbacks that we expect to address in future rounds of the CHIS. Although we conducted interviewer debriefings, the absence of a pre-test was a notable omission. We also addressed only one component of cultural adaptation. The process we described was limited to scripting reassurances or explanations to enhance the acceptability of questions that might be considered meaningless, sensitive, or intrusive. The issues involved in cultural adaptation are far more extensive. 16 But achieving crosscultural equivalence poses a challenge for survey research, and requires dedicated resources and investments to produce meaningful instruments across languages and cultures. Similarly, our translation effort set a modest objective of reaching content equivalence. Conceptual equivalence should be the desired goal for cross-cultural survey research. Yet, as a policy planning tool, CHIS 2001 vastly improved on thencurrent limited translation or ad hoc interpretation efforts by major national population surveys. Of course, the costeffectiveness considerations in surveying California residents are different from those in nationwide studies.

The paper and pencil administration of the Chinese, Korean, and Khmer surveys posed a significant encumbrance, increasing interviewer time and consequently respondent fatigue. The interviewer error rate may also have increased from juggling between the English CATI screens (to enter data and to utilize the automated skips) and the hard copy versions (to read the questions). Future surveys should be administered entirely with CATI to reduce both errors and respondent burden. Moreover, using identical interview methodology across languages ensures technical equivalence. This was the case for CHIS 2003.

The choice of groups targeted for cultural and linguistic adaptation is also an important consideration. This effort focused on groups identified as communities of color, excluding non-Latino white cultural subgroups such as people of Armenian, Russian, Bosnian, and Iranian birth or ancestry—groups that may also experience cultural and linguistic barriers to care resulting in unattended health needs. Census 2000 individual-level sociodemographic information as well as census tract-level information on neighborhood ethnic enclaves, which can be used as proxy measures of a group's level of acculturation, will guide us in selecting targeted groups for future CHIS surveys.

Finally, a reassessment of our criteria for language selection raised concerns about biases that may have been introduced in favoring linguistic isolation over other criteria. For example, some Filipino and Asian Indian community advocates argued that the linguistic isolation rate (<10% for each of these groups⁹) unfairly excluded these groups from CHIS 2001 language inclusion efforts. The bimodality of these populations (in which English speakers are the most acculturated and most educated and those who are linguistically isolated exhibit the greatest needs) perpetuates a stereotype of a "model minority" if the survey is conducted only in English. This concern raises a tradeoff decision: whether to translate for the most linguistically isolated groups or to translate for groups with distinct sociodemographic bimodalities to reduce the biases in selecting only the most acculturated. For future CHIS surveys and others that are being considered for multi-language administration, this tradeoff merits greater consideration.

CONCLUSIONS

The CHIS 2001 experience supports the feasibility of conducting population-based surveys in multiple languages. Given CHIS 2001's goals and parameters, use of RMFT for Spanish and RSFT for the Asian languages enabled us to complete Spanish, Cantonese, Mandarin, Vietnamese, Korean, and Khmer translations in seven months. In addition, the translations benefited from a structured process that reflected a variety of views: those of cultural reviewers and focus group participants prior to translation and the final assessment by our data collection firm's interviewers of suitability for use in telephone interviews.

More than 33% of respondents from the target language groups completed a translated version of the CHIS 2001 survey. Large segments of certain subpopulations would not have been interviewed had there not been a cultural and linguistic adaptation of the survey. With increasing cultural diversity, such an omission could inaccurately represent the health needs of populations and potentially obfuscate health policies. Our experience supports the importance of cultural and linguistic adaptation in raising the quality of population-based surveys, especially when the populations they intend to represent are as diverse as California's.

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